CLAIMS

1. A method of propagating adult mammalian skeletal muscle cells, the method comprising culturing the cells in a mitogen-rich cell culture medium supplemented with an amount of TGF-β effective to reversibly suppress myoblast differentiation.

2. The method of claim 1, wherein the skeletal muscle cells are human.

3. The method of claim 1, wherein the cell culture medium comprises at least 5% serum.

4. The method of claim 1, wherein TGF-β is one of, or any combination of, TGF-β1, TGF-β2, and TGF-β3, or heterodimers thereof.

5. The method of claim 1, wherein the effective amount of TGF-β is from 0.01 to 200 ng/ml.

6. The method of claim 1, wherein the skeletal muscle cells are primary cells.

7. The method of claim 1, wherein the skeletal muscle cells are passaged.

8. The method of claim 1, wherein the skeletal muscle cells are cultured in the presence of TGF-β for at least 12 hours.

9. The method of claim 1, wherein the skeletal muscle cells are grown to over 30% confluence prior to passaging or harvest.

10. The method of claim 1, wherein the skeletal muscle cells are grown to cell density of over 0.1×10^5 cells/cm^2.

11. The method of claim 1, wherein expression of creatine kinase by skeletal muscle cells is reduced by at least 20% relative to a control culture propagated without the supplementation with TGF-β.

12. The method of claim 1, wherein expression of desmin by CD56-positive myoblasts is reduced by at least 20% relative to CD56-positive myoblasts propagated without the supplementation with TGF-β.

13. The method of claim 1, wherein expression of creatine kinase by skeletal muscle cells is reduced by at least 20% relative to the same culture of skeletal muscle cells prior to the addition of TGF-β.

14. The method of claim 1, wherein expression of desmin by CD56-positive myoblasts is reduced by at least 20% relative to CD56-positive myoblasts in the same culture of skeletal muscle cells prior to the addition of TGF-β.

15. Cells produced by the method of any one of claims 1-14.

16. A method of treating myocardial infarction, comprising transplanting the cells of claim 15 into infarcted myocardium.

17. The method of claim 16, wherein the cells are autologous or allogeneic.

18. Cultured skeletal muscle cells expressing normal levels of CD56 and reduced levels of desmin, wherein desmin expression is at least 20% lower than in the primary culture.

19. Cultured skeletal muscle cells expressing normal levels of CD56 and reduced levels of desmin, wherein desmin expression is at least 20% lower than in a control culture propagated without TGF-β.

20. Cultured skeletal muscle cells expressing normal levels of CD56 and reduced levels of expression of desmin, wherein desmin expression is at least 20% lower than that in the culture prior to the addition of TGF-β.

21. A method of treating myocardial infarction, comprising transplanting the cells of any one of claims 18-21 into infarcted myocardium.

22. The method of claim 16, wherein the cells are autologous or allogeneic.

23. A method for evaluating the differentiation state of myoblasts in a skeletal muscle cell culture, the method comprising determining the amount of desmin expressed by a population of CD56-positive cells in the skeletal muscle cell culture, wherein the amount of desmin below a threshold level indicates the presence of undifferentiated myoblasts in the SkMC culture.

24. The method of claim 23, wherein the amount of desmin is determined using fluorescence-activated cell sorting.